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| 10/062,112 | 02/01/2002 | Curtis E. Adams | 00069CON | 9977 |

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| EXAMINER | |
|---|---|
| SHOSHO, CALLIE E | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1714 | |

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/062,112 | ADAMS, CURTIS E. | |
| | Examiner | Art Unit | |
| | Callie E. Shosho | 1714 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3,5-9,11-13,15-19,22-25,29,33 and 49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *33 and 49* is/are allowed.

6)☒ Claim(s) *3,5-9,11-13,15-19,22-25 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/3/06 has been entered.

2. All outstanding rejections are overcome by applicant's amendment filed 10/3/06.

3. It is noted that although claims 5-9, 11-13, 15-19, and 22-25 each ultimately depend on a cancelled claim (see paragraph 6 below), with respect to the objections and rejection set forth below, it is assumed that claims 5, 8, 9, 11, 13, 15, 16, 17-19, and 22-25 each depend on claim 3.

### *Claim Objections*

4. Claims 6, 8, and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 6, which ultimately depends on claim 3, recites that the functional group of the modified pigment comprises at least one organic group that "comprises at least one ionic group,

at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group" while claim 3 recites that the functional group of the modified pigment is anionic. Thus, claim 6 fails to further limit the scope of the claim on which it depends, namely, claim 3, given that while claim 3 requires that the modified pigment have attached at least one anionic functional group, claim 6 broadly requires the functional group of the pigment "comprises at least one ionic group, at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group" which includes cationic group which is outside the scope of claim 3.

Similar objections arise with respect to claim 8, which also ultimately depends on claim 3, and recites "the functional group of the modified pigment comprises at least one ionic group, at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group". Thus, claim 8 fails to further limit the scope of the claim on which it depends, namely, claim 3 given that while claim 3 requires that the modified pigment have attached at least one anionic functional group, claim 8 broadly requires the functional group "comprises at least one ionic group, at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group" which includes cationic group which is outside the scope of claim 3.

Similar objection arises with respect to claim 22, which also ultimately depends on claim 3, and which recites "the functional group of the polymer comprises at least one ionic group, at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group". Thus, claim 22 fails to further limit the scope of the claim on which it depends, namely, claim 3 given that while claim 3 requires that the polymer have attached at least one anionic functional group, claim 22 broadly requires the functional group of the polymer "comprises at

least one ionic group, at least one ionizable group, or a mixture of at least one ionic group and at least one ionizable group" which includes cationic group which is outside the scope of claim 3.

## ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 5-9, 11-13, 15-19, and 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The scope of each of claims 5, 8, 9, 11, 13, 15, 16, 17-19, and 22-25 is confusing given that each claim depends on a cancelled claim, namely, claim 1. Should the dependency of each of claims 5, 8, 9, 11, 13, 15, 16, 17-19, and 22-25 be changed from claim 1 to claim 3?

## ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 3, 5-9, 11-13, 15-17, 22-25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. (U.S. 6,251,175) in view of either Belmont et al. (U.S. 5,713,988) or Johnson et al. (U.S. 6,478,863).

Zhu et al. disclose ink jet ink comprising non-aqueous liquid vehicle, pigment, polymer that comprises anionic functional group, i.e. styrene-acrylic acid or polyacrylic acid, and salt having polyvalent metal cation such as calcium. There is further disclosed a method wherein the above ink is incorporated into ink jet printer and then printed onto substrate (col.1, lines 10-13, col.2, lines 36-44, col.3, lines 8-17, 27, and 30-31, col.5, lines 33-34 and 58-64, and col.7, lines 22 and 25).

The difference between Zhu et al. and the present claimed invention is the requirement in the claims of specific pigment.

Belmont et al., which is drawn to non-aqueous ink jet inks, disclose the use of modified pigment comprising pigment such as carbon black having attached aromatic group containing anionic functional group such as carboxyl group in order to produce ink with improved jettness and improved optical properties (col.1, lines 14-15 and 37-45, col.2, line 65-col.3, line 1, col.3, lines 15-22, and col.4, lines 4-10).

Alternatively, Johnson et al., which is drawn to non-aqueous ink jet inks, disclose the use of modified pigment comprising pigment such as carbon black or organic pigment having attached anionic functional group such as carboxyl group. The motivation for using such pigment

is that there is no need for the ink to contain dispersant, pigment has increased dispersability, and there is a significant advantage and cost savings by reducing or eliminating the milling steps used with conventional pigment (col.1, lines 54-57, col.3, lines 31-37, col.3, line 64-col.4, line 18, col.6, lines 18-25 and 55, col.10, lines 60-62, col.11, lines 13-19, and col.14, lines 33-43).

Although there is no disclosure that anionic functional group present on the pigment as disclosed by Belmont et al. or Johnson et al. and the anionic functional group present on the polymer of Zhu et al. are capable of coordinating with the polyvalent cation of the salt disclosed by Zhu, given that Belmont et al. or Johnson et al. each disclose pigment having attached anionic functional group identical to that presently claimed and Zhu discloses polymer having anionic functional group identical to that presently claimed and salt comprising polyvalent cation identical to that presently claimed, it is clear that the functional group of each of the pigment and the polymer are intrinsically capable of coordinating with the polyvalent ion.

In light of the motivation for using specific pigment disclosed by Belmont et al. or Johnson et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Zhu et al. in order to produce ink with improved jettness and improved optical properties, or alternatively, to produce ink with improved dispersability, and thereby arrive at the claimed invention.

9. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. in view of either Belmont et al. or Johnson et al. as applied to claims 3, 5-9, 11-13, 15-17, 22-25, and 29 above, and further in view of Lin (U.S. 5,997,623).

The difference between Zhu et al. in view of either Belmont et al. or Johnson et al. and the present claimed invention is the requirement in the claims of specific type of salt.

Lin, which is drawn to ink jet inks, discloses using salt comprising polyvalent metal cation such as zinc and polyvalent metal anion such as sulfate in order to produce ink with conductivity suitable for ink jet printing. Lin also discloses the equivalence and interchangeability of such salt with calcium chloride as disclosed by Zhu et al.(col.14, lines 55-56 and col.14, line 64-col.15, line 2).

In light of the motivation for using such salt disclosed by Lin as described above, it therefore would have been obvious to one of ordinary skill in the art to use such salt as the salt in Zhu et al., and thereby arrive at the claimed invention.

***Allowable Subject Matter***

10. Claims 33 and 49 are allowable over the "closest" prior art Zhu et al. (U.S. 6,251,175), Belmont et al. (U.S. 5,713,988), or Johnson et al. (U.S. 6,478,863) given that there is no disclosure in Zhu et al., Belmont et al., or Johnson et al. of ink comprising modified pigment having attached cationic group, at least one salt having a polyvalent anion, and polymer comprising cationic functional group wherein the cationic functional group of each of the pigment and polymer are capable of coordinating with the polyvalent anion.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
12/9/06